

Kindergarten
2016 Science Standards Resource Guide

Physical Science				
2016 Indiana Academic Standards	Clarifying Statements	Vocabulary	Crosscutting Concept	Disciplinary Core Idea
<p>K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.</p>	<p>(1) Identify the specific physical properties that students will be looking at. <i>(Collaborate with first grade so that student knowledge is growing with what is expected in first grade.)</i></p> <p>(2) Allow students the opportunity to sort and describe based on their own ideas.</p>	<p>composition – characteristics that make up something</p> <p>physical properties – observed or measured without changing the composition</p>	<p>Structure and Function</p>	<p>PS1.A: Structure and Properties of Matter</p>
<p>K.PS.2 Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.</p>	<p>(1) Identify different objects and the way that they are useful.</p> <p>(2) Look at how objects can have different uses.</p> <p>(3) Allow opportunities for students to record their ideas for uses so that it can be shared with their peers to discuss the uses.</p>	<p>object – a material thing that can be seen and touched</p>	<p>Structure and Function</p>	<p>PS1.A: Structure and Properties of Matter</p>

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<p>K.PS.3 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p>	<p>(1) Students need to understand the difference between a push and pull. (2) Understand what happen when different strengths are applied to an object. (3) Understand what happens on the motion of an object with push/pull motion. (4) Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.</p>	<p>motion – any movement or change in position or time push/pull – direction that an object can go when force is applied</p>	<p>Cause and Effect</p>	<p>PS2.A: Forces and Motion</p> <p>PS2.B: Types of Interactions</p>
<p>K.PS.4 Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p>(1) Allow students the opportunity to construct something that can be changed/altered so that they can test how speed or direction can change based on the push/pull. (2) Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. (3) Examples of solutions could include tools such as a ramp to increase the speed of an object and a structure that would cause an object such as a marble or ball to turn.</p>	<p>data – information that is collected design solution – a creation/construction that can be tested</p>	<p>Cause and Effect</p>	<p>PS2.A: Forces and Motion</p>

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Earth and Space Science				
2016 Indiana Academic Standards	Clarifying Statements	Vocabulary	Crosscutting Concepts	Disciplinary Core Idea
<p>K.ESS.1 Make observations to determine the effect of sunlight on Earth’s surface and use tools and materials to design and build a structure to reduce the warming effect on Earth's surface.</p>	<p>(1) Understand that the sun’s energy (light) heats the Earth.</p> <p>(2) Students will create something that will block the sun’s energy (sunlight) that reduces the warming effect on Earth’s surface.</p> <p>(3) Examples of Earth’s surface could include sand, soil, rocks, and water.</p> <p>(4) Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.</p>	<p>sunlight – energy that is put off by the sun that creates a heating effect</p> <p>warming effect – Earth heating up due to the sun’s energy (sunlight)</p>	<p>Cause and Effect</p> <p>Interdependence of Science, Engineering, and Technology</p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p>	<p>ESS1.B: Earth and the Solar System</p> <p>PS3.B: Conservation of Energy and Energy Transfer</p>

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<p>K.ESS.2 Describe and compare objects seen in the night and day sky, observing that the sun and moon move across the sky.</p>	<p>(1) Students will make the observation that the sun moves across the sky but this will allow the teacher to teach that the sun and moon due not actually move across the sky but appear to do this due to the Earth rotating. <i>There is confusion that this standard is to teach false information but it is honing in on what students will observe so that student misunderstandings can be corrected.</i></p> <p>(2) Allow students to look for different objects that can be seen in both the night and day sky.</p>	<p>objects – there is no specified list of objects that students must be able to see or know about</p>	<p>Patterns; Systems and System Models</p>	<p>ESS1.B: Earth and the Solar System</p>
<p>K.ESS.3 Investigate the local weather conditions to describe patterns over time.</p>	<p>(1) Along with students look at the current weather, they need to look at patterns of the weather over time. The teacher decides what the span of time looks like.</p> <p>(2) Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm)</p> <p>(3) Examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month.</p> <p>(4) Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.</p>		<p>Patterns</p>	<p>ESS2.D: Weather and Climate</p>

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<p>K.ESS.4 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p>	<p>(1) Examples of human impact on land could include cutting trees to produce paper and using resources to produce bottles. (2) Examples of solutions could include reusing paper and recycling cans and bottles.</p>		<p>Cause and Effect</p>	<p>ESS3.C: Human Impacts on Earth Systems</p> <p>ETS1.B: Developing Possible Solutions</p>
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Life Science				
2016 Indiana Academic Standards	Clarifying Statements	Vocabulary	Crosscutting Concepts	Disciplinary Core Ideas
K.LS.1 Describe and compare the growth and development of common living plants and animals.			Structure and Function; Stability and Change	LS1.B: Growth and Development of Organisms
K.LS.2 Describe and compare the physical features of common living plants and animals.			Structure and Function	LS3.A: Inheritance of Traits LS3.B: Variation of Traits
K.LS.3 Use observations to describe patterns of what plants and animals (including humans) need to survive.	(1) Examples of patterns could include that animals need to take in food but plants do not, the different kinds of food needed by different types of animals, the requirement of plants to have light, and that all living things need water.		Patterns	LS1.C: Organization for Matter and Energy Flow in Organisms

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Engineering				
2016 Indiana Academic Standards	Clarifying Statements	Vocabulary	Crosscutting Concepts	Disciplinary Core Ideas
K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.	<p style="text-align: center;"><i>Collaborate across K-2 grade levels to ensure that the standard is adequately instructed over the course of three years.</i></p> <p>(1) Explore situations that people would want to change through questions, observations, and information. (2) Use data that is age-appropriate to define a simple problem. (3) Construct a new or improve an object or tool.</p>	<p>observation – action or process of observing something or someone carefully or in order to gain information situation – a set of circumstances in which one finds oneself data – facts and statistics collected together for reference and analysis construction – to build or form by putting together parts</p>		ETS1.A: Defining and Delimiting Engineering Problems
K-2.E.2 Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.	<p style="text-align: center;"><i>Collaborate across K-2 grade levels to ensure that the standard is adequately instructed over the course of three years.</i></p> <p>(1) Explore how the shape of an object helps it function to solve a problem.</p>	<p>sketch – a rough design, plan, or draft drawing – graphic representation physical model – physical copy of an object</p>	Structure and Function	ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution
K-2.E.3 Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.	<p style="text-align: center;"><i>Collaborate across K-2 grade levels to ensure that the standard is adequately instructed over the course of three years.</i></p> <p>(1) Look at age-appropriate data of two objects (2) Compare strengths and weaknesses</p>	<p>data – facts and statistics collected together for reference and analysis perform – carry out, accomplish, or fulfill an action, task, or function</p>		ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution